



# The welfare cost of imperfect competition and distortionary taxation<sup>☆</sup>

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## Abstract

The welfare cost of imperfect competition in the product and labor markets in the United States is quantified in a dynamic general equilibrium model. We find that the welfare cost of imperfect competition in the product market is 3.62 percent while it is 0.58 percent in the labor market, taking the transition path from the distorted to the optimal steady state into account. If we also take into account that the US economy is characterized by distortionary taxation, the welfare cost of the product market distortion increases to 13.51 percent and the labor market distortion to 4.35 percent.

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## 1. Introduction

Product and labor markets are in general characterized by imperfect competition. This implies that the economic welfare is lower than what it could have been if markets were fully competitive. Many macroeconomic policies therefore aim to enhance competition. Examples of such policies are the recent deregulation of network industries in many countries and the European Commission's initiative to promote a single market where monopolies and price agreements are outlawed.

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Modern economies are also characterized by distortionary taxation. Theory tells us that we should expect important cumulative effects of different distortions; that is, the cost of one distortion depends on the level of another, see for example Cooley and Hansen (1991), Lockwood (2003), and Jonsson and Klein (2003). From a policy perspective it is therefore interesting to know how big the cumulative effects of imperfect competition and taxation are in practice.

This paper focuses on three related issues: How large is the welfare cost of imperfect competition in the product and labor markets? By how much does the welfare cost of imperfect competition increase when accounting for distortionary taxation? And finally, by how much does the welfare cost of distortionary taxation increase when accounting for imperfect competition? We answer these questions by parameterize a dynamic general equilibrium model to fit the stylized facts of the US economy. When calculating the welfare cost we take the transition path from the distorted to the optimal steady state into account.

The economic environment features monopolistic competition in product and labor markets. In the product market each firm has monopoly power over its differentiated product and sets the price as a markup over the marginal cost. In the labor market, households have a degree of monopoly power over their own labor services. They can be thought of as organizing themselves in so called “craft” unions and acting as wage-setters in the labor market. To this end they set the wage rate as a markup over the marginal rate of substitution between leisure and consumption. The government fulfills its budget constraint period by period and finances an exogenous stream of government purchases by imposing distortive flat-rate taxes. Taxes are levied on earnings from capital and labor. The government also receives income from a consumption tax and seigniorage from the monetary authority. Money is introduced through a cash-in-advance constraint, which is a simple way to model the fact that money facilitates transactions.

The benchmark estimates of the price and wage markups are taken from Bayoumi et al. (2004), which means that the price markup is 23 percent and the wage markup 16 percent. The model then implies that the welfare cost of the product market distortion is 3.62 percent; that is, a household would need 3.62 percent extra consumption, permanently, to be as well off under the current level of the price markup as under perfect competition. For the labor market distortion this number is 0.58 percent. Why are product market distortions more costly than labor market distortions? Both the price and wage markups distort the household’s optimal consumption-leisure choice. The wedge is similar to that of a labor tax. On the other hand, only the price markup distorts the optimal accumulation of capital and the wedge is similar to that of a capital tax. The model’s prediction is therefore that policies that enhance product market competition are more likely to be efficient in terms of welfare.

To quantify the cumulative effects of distortionary taxation we use data on tax rates from Carey and Rabesona (2002). The capital tax is thus 37 percent, the labor tax 26 percent and the consumption tax 5 percent. The money growth rate is set to its 1960–2003 average of 5.6 percent. When accounting for the tax distortions the welfare cost of the price markup increases from 3.62 to 13.51 percent and the welfare cost of the wage markup increases from 0.58 to 4.35 percent. Hence, it is quantitatively important to include the cumulative effects of distortionary taxation.

By the same argument, to get good measures of the welfare cost of distortionary taxation it is necessary to include the product and labor markets distortions. By accounting for imperfect competition the welfare cost of distortionary taxation increases from 8.52 to 22.52 percent.

Estimating the welfare cost from imperfect competition has a long tradition in economics. Furthermore, the estimates have tended to vary a lot. At one extreme, Harberger (1954) estimated the welfare cost of monopoly power to be 0.1 percent of GNP for the US economy. At the other extreme, Cowling and Mueller (1978) found a welfare cost of the order of 10 percent of GNP.

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